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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,739	12/22/2000	Matthew B. Dubin	H17-25994	6889
128	7590	10/30/2003	EXAMINER	
HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			AKKAPEDDI, PRASAD R	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 10/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/746,739

Applicant(s)

DUBIN ET AL.

Examiner

Prasad R Akkapeddi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2003 .
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ .
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_ .

### **DETAILED ACTION**

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Response to Arguments***

2. Applicant's arguments filed 07/17/2003 have been fully considered but they are not persuasive. The original rejections as stated in the Office action dated April 21, 2003 are still valid.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United

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States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1-8,12-14, 17-18, 22-25, 27-32, 36-38 and 40 are rejected under 35

U.S.C. 102(e) as being anticipated by Itoh et al. (Itoh) (U.S.Patent No. 6,337,724).

As to claim 1: Itoh discloses a tiled display apparatus (100) comprising a plurality of display devices (11) wherein each display device is subdivided into a plurality of sections (32, 33) and each section is configured to display a sectional (partial) image, a screen (1) and a plurality of lens assemblies (21, 22), wherein the lens assemblies is optically coupled to each of the sections in the display devices to project the sectional (partial) image displayed on that section onto the screen, and the plurality of lens assemblies are configured to merge the projected sectional images to form a single tiled (whole) image (Fig. 2) (Col.2, lines 48-50).

As to claims 2-5: Itoh discloses that each display device consists of liquid crystal display modules (flat panel) (Col. 2, line 52), fluorescent display tube (non-FPD), CRT display and rear projection displays.

As to claims 6-8: Itoh discloses the screen comprises a rear projection screen (1) having a rear side and a front side, and wherein the sectional (partial) images are projected onto the rear side (col. 5, lines 1-2) and the tiled image (whole) is viewable from the front side (Fig. 2), each of the lens assemblies (30) includes a projection lens (21, 22) for projecting the respective partial image onto the screen and they appear symmetric (Fig. 2).

As to claims 12-14: Itoh discloses that each lens assembly (30) also includes a field lens (31) for focusing the respective sectional image onto the respective projection lens (21) and the projection lens of each lens assembly has an optical axis and the field lens of each lens assembly has the same optical axis (Fig. 2) (drawn as a line through the center). In Fig. 1, Itoh shows the optical axis of the projection lens (21) is oriented horizontal and the optical axis of the field lens is oriented in the vertical direction thus making the two axes different.

As to claims 17-18: Fig. 2 of Itoh clearly shows that the magnification of the lens assembly is greater than 1 such that the projected partial image on the screen is larger than the corresponding partial image on the image display device. Itoh also discloses a dead-band (60) which is not projected onto the screen (1) and the dead band thickness is selected such that no bad effect is generated when projected to a full image (Col. 5, lines 26-37). The merging of the images can clearly be seen in Fig. 17.

As to claims 22-25 and 27: Itoh discloses plurality of backlight assemblies (50), each backlight assembly optically coupled to one of the display devices (Fig. 27), and each backlight channel is configured to provide a separate backlight for one of the sections of the corresponding display device (Fig. 27), each backlight channel includes a condenser (31) for concentrating light received from a light source onto the section and each backlight channel includes a fiber bundle (52). In Fig. 27, light from the back light assembly (50) is shown to enter into an element (not numbered) that has a taper and a lens is placed after the

tapered element for collimation. Itoh has an extensive discussion on a corrective control circuit (means) (220) for distortion control (Col. 8, lines 44-67 and Col. 9, lines 1-54).

As to claims 28-32 and 36: Since a device cannot be manufacturable without a method and since the method claims as recited do not contain any specific sequence of steps or any unique combination of steps. Hence the method of generating a tiled display is inherent in the disclosure of Itoh.

As to claims 37-38 and 40: Itoh discloses an apparatus for generating a tiled display, comprising a plurality of display devices (30), a screen (1), means (32) for subdividing each display device into a plurality of sections (34), means (32,33) for displaying a sectional image on each section of each display device, and means (21, 22) for projecting the sectional image displayed on each section of each display device onto the screen with the projected images merged into a tiled image (Fig. 2). The projecting means includes means (21) for magnifying at least one of the sectional images so the projected sectional image on the screen is larger than the corresponding sectional image on the display device (Fig. 2). Itoh also discloses a means for distortion control (260).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of Hirata et al. (Hirata) (U.S. Patent No. 6,299,313).

Although Itoh discloses a projection lens, he does not disclose the details of its optical prescription. Hirata on the other hand, in disclosing a projection display apparatus, discloses the projection lens has doublet of identical lenses and triplet of lenses (Fig. 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the doublets and triplet lenses to obtain flat picture image for a wide field angle such that good focus quality can be achieved at every corner of the screen (col.3, lines 57-65).

7. Claims 11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh and Hirata as applied to claims 1 and 7 above, and further in view of Sheridan (U.S. Patent No. 5,777,782).

Neither Itoh nor Harata disclose the use of ball lenses or plastic lenses. Sheridan on the other hand, in disclosing display system discloses the use of plastic ball type lenses (21) and an array of these lenses (Fig. 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the plastic ball lenses for lightweight, flexible displays (col.1, lines 60-64).

8. Claims 19-21, 33-35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of Schwarzenberger (U.S. Patent No. 6,128,054).



Although Itoh discloses that the gap between the adjacent display devices can be minimized by reducing the thickness of the board (60) (Col. 5, lines 26-37), Itoh does not disclose the shifting of the image by the lens assembly.

Schwarzenberger on the other hand, in disclosing an apparatus for displaying an image discloses the arrays shift the given parts of the display area to form a viewable image of the whole display area in which the gaps between the neighboring parts of the image are less visible (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the specific configuration disclosed by Schwarzenberger to the device disclosed by Itoh so that the gaps between the neighboring parts of the image are less visible than the gaps between neighboring parts of the display area (abstract).

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh in view of Zimmerman et al. (Zimmerman) (U.S. Patent No. 5,598,281).

Itoh does not disclose tapered light pipes for communicating light from a light source onto the section.

Zimmerman discloses such tapered optical elements (30) for a backlight assembly used in display devices.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the tapered optical elements (pipes) as disclosed by Zimmerman for an improved lighting/optical arrangement which provides an efficient, bright and uniform image of high contrast and is

capable of being viewed over a wide viewing angle, while maintaining a narrow profile (col.1, lines 56-60).

***Response to Arguments***

12. Following is the response by the examiner to the applicant's arguments.

(a). Applicant's argument No. 1 (Amendment and Response dated 07/17/2003, page 10, lines 2-7): "Itoh does not divide display devices into sections that display sectional images.....The images projected through the panel are merged through projection lenses 20 and 21 to form a single image per display device, not sectional images as claimed".

Examiner's response to argument No. 1: Contrary to the applicant's argument, it is respectfully pointed out that Itoh does teach sectional images (calls them partial images) and teaches that plurality of partial images to compose a whole image (col. 2, lines 48-50). For lack of a better labeling in the Itoh's reference, the Examiner referred to items 32 and 33 as sections. In fact, it is true that the sections referred to by numerals 32 and 33 are section that project partial images. Hence, Itoh does teach sectional images as recited in the instant claims. It is also true that the liquid crystal panels provide color and luminance, as pointed out by the applicant. However, the color and luminance is provided to the partial images supplies to each section of the liquid crystal panel.

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(b) Applicant's argument No. 2 (Page 10, lines 8-9): Claim 1 also references that "the plurality of lens assemblies are configured to merge projected sectional images to form a single tiled image". This element is lacking in Itoh.

Examiner's response to argument No. 2: Again, the Examiner respectfully differs with the applicant's argument. As pointed out in (col. 2, lines 48-50) Itoh teaches that the plurality of partial images (sectional) to compose a whole image (single tiled image). In Fig.2, it can clearly be seen that plurality of lens assemblies (21, 22) are configured to achieve this.

(c) Applicant's argument No. 3 (Page 10, lines 17-18): "It is clear that the dividers (60) perform the merging and not lens assemblies as claimed in claim 1, and claims 2-27, which depend from claim 1.

Examiner's response to argument No. 3: As pointed out by the applicant, it is very clear that Itoh teaches that the dividers are used as light shielding boards so that the light is not interfered by other light from other liquid crystal modules. Hence, if they block unnecessary light from interfering with each other, how can they function to 'perform merging' as argued by the applicant?

(d) Applicant's argument No. 4 (Page 10, lines 21-28): Itoh does not teach "means for subdividing each display device into plurality of sections, means for displaying a section image and means for projecting the sectional image.....".

Examiner's response to argument No. 4: Itoh teaches plurality of processors for correcting the partial image signals (col. 3, lines 27-31) (means for subdividing), means for displaying (34, 35) and means for projecting (lenses 21

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and 22). Hence in the Examiner's opinion, Itoh does teach all the limitations as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.



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Prasad R Akkapeddi  
Examiner  
Art Unit 2871



TOANTON  
PRIMARY EXAMINER